

GSFC-JPL Quality Mission Software Workshop - April 2001

http://rtsel.gsfc.nasa.gov/moc_tech/web/workshop/workshop.htm

Sponsored by:

The Information Systems Center, Code 580, GSFC and
The Information Technologies and Software Systems Division, Code 3600, JPL

Workshop Chairs:

Ms. Mary Ann Esfandiari, Associate Chief, Information Systems Center, GSFC
Mr. Richard Doyle, Phd., Chief, Center for Space Information and Software Systems, JPL
Ms. Chi Lin, Partner Program Manager/External Liaison, Center for Space Information and Software Systems, JPL
Mr. John Donohue, Associate Branch Manager, Information Systems Center, GSFC

Mary Ann Esfandiari and Richard Doyle cordially invite you to attend this joint workshop that continues with last year's theme of quality mission software, including flight software failure detection and validation. Flight software test specialists and flight software system engineers are encouraged to participate. There will be 5 working sessions and 3 informational sessions. Please see below for session details.

SESSION DESCRIPTIONS:

Working Sessions (5)

1. **Roles And Organizational Models For Flight S/W Projects** (co-chair Leslye Boyce, Elaine Shell, Dave Eisenman-JPL)
Summary
Flight software efforts can be managed in an environment of effective, risk mitigating productivity. But it seems that for every success, there is a 'disaster'. Even flight software efforts requiring only one programmer have become high risk. This workshop session will consider mission organizational structures and the management issues that impact flight software teams. The focus will be organizations external to the flight software team, plus the highest level of flight software team leadership.
2. **Generic, High Fidelity FSW Test-Bed Capabilities** (co-chair GSFC - Tom Clement, JPL co-chair TBA)
Summary
The purpose of this working session is to establish the general capabilities for high fidelity test bed systems used in the development, testing, and maintenance of spacecraft flight software systems. The participants in this working session will accomplish this by reviewing a GSFC draft document that describes the ideal capabilities of high fidelity Flight Software Test Beds (FSTBs). The goal of the session is to develop a clear and unambiguous set of generic capabilities and justification for each capability, as well as to identify the risks associated with omitting any capability.
3. **Spacecraft Fault Protection S/W Implementation Strategies** (co-chair Dave McComas, Abdullah Aljabri-JPL)
Summary
The purpose of this working session is to address issues concerned with implementing fault protection in flight software (FSW). The goals of the session are to exchange information and to produce a FSW fault protection guidebook. The session will look at the entire spacecraft lifecycle (requirements, design, code, testing, operations, and maintenance) from the perspective of FSW fault protection. Both technical and non-technical issues will be addressed. Technical issues include: requirement definition, implementation techniques, testing techniques, and onboard maintenance. Non-technical issues include development processes, roles and responsibilities, and technology insertion processes.
4. **Validation Testing and Stress Testing of Flight Software** (co-chairs: Ken Rehm, Tom Jackson-GSFC, John Hackney-JPL)
Summary
This session will focus on guidelines for a generic test program which will validate performance of the fully integrated spacecraft flight software system during all phases of mission life. The intent is to cover both nominal and anomalous / failure on-orbit scenarios. During the workshop session, participants will review existing generic test definition guidelines that are intended to offer suggestions to a flight software test team which has been tasked to assure that the FSW will accommodate all possible on-orbit situations.

5. **CMM - Process Improvement For CMM Level 3 And Beyond** - (co-chair M. Stark, J. Lubelczyk, D. Nichols & L. Bright - JPL)

Summary

This session will focus on opportunities for JPL and GSFC to collaborate on process improvement activities. This collaboration will be shaped by the Agency-level goal of attaining CMM Level 3 at all Centers. The session will focus on identifying each Center's process and process engineering capabilities, and then to create a plan for collaboration between the Centers. There will also be short presentations on how the JPL process organization will be structured (GSFC's will be similar) and on key enablers and inhibitors of a successful process improvement program.

Informational Sessions (3)

1. **Mars Climate Orbiter And Mars Polar Lander Findings** (Ron Morillo-JPL)

Summary

A summary report on the review of the software development process at Lockheed-Martin for MCO, MPL and Stardust missions. In response to the findings and recommendations of the Mars Polar Lander (MPL) Failure investigation board, JPL initiated a software process review aimed at identifying and correcting the root causes of the software issues raised in the board report. Our objective is to record any relevant lessons learned and use these lessons to modify, where applicable, our internal processes and external interfaces with customers and contractors, in order to ensure that similar problems are not likely to occur in the future.

2. **Nasa S/W Working Group Report** (co-chairs Sally Godfrey - GSFC, John Kelly - JPL)

Summary

The NASA Software Working Group (SWG) is chartered by the Chief Engineer to develop and oversee the formulation and implementation of an Agency wide plan to work toward continuous, sustained software engineering process and product improvements in NASA; and to ensure appropriate visibility of software issues within the Agency. The Software Working Group has played a significant role over the past year in working with the Enterprises and Centers to ensure the success of NASA's Initiative to Improve Quality and Safety of Software. This initiative has major thrusts in the following areas: using CMM level 3 as a "benchmark" to measure the progress at the Centers toward achieving the NASA plan goal of, "Achieve, sustain, and advance software engineering1 practices to effectively deliver the scientific and technological objectives of NASA"; develop NASA Software Guidelines (NPG 2820.1) using IEEE 12207 as a foundation with additional guidance in Verification & Validation, end-to-end testing, and metrics; and pilot and implement a meaningful software metrics program for all major activities within the Agency. This talk will supply important update information that affects software process and product improvement plans at Goddard and JPL for FY 02 -07.

3. **Upgrade Of Legacy Systems** (Charles Norton-JPL)

Summary

Many mission-critical scientific applications often rely on a legacy of software representing great intellectual and commercial value. This software is generally well debugged, produces trusted results, is actively meeting end-user goals, and preserves (sometimes hidden) expert knowledge that cannot be easily reproduced. Nevertheless, more ambitious missions require increased capabilities that impose new demands on software. Should these legacy codes be abandoned and rewritten from scratch, or can they be modernized to achieve new objectives?

AGENDA/SCHEDULE

Day 1 - April 24, 2001

Activity		Time	Point of Contact	
Breakfast		7:30 AM - 9:00 AM	Mary Floyd	
Registration		8:30 AM - 9:30 AM	Mary Floyd	
Introduction		9:30 AM - 10:00 AM	Mary Ann Esfandiari, Rich Doyle	
Working Session #1 Room A	Working Session #2 Room B	10:00 AM - 1:00 PM	#1 - Leslye Boyce, Elaine Shell, Dave Eisenman	#2 Tom Clement, J. Roberts
Lunch		1:00 PM - 2:00 PM	Mary Floyd	
Working Session #3 Room A		2:00 PM - 5:00 PM	Dave McComas, Abdullah Aljabri	
Break before dinner		5:00 PM - 6:00 PM		
Conference Dinner		6:00 PM - 7:00 PM	Mary Floyd	
Evening Event		7:00 PM	Mary Floyd, John Donohue	

Day 2 - April 25, 2001

Activity		Time	Point of Contact
Breakfast		7:30 AM - 9:00 AM	Mary Floyd

Introduction		9:00 AM - 9:30 AM	Mary Ann Esfandiari, Rich Doyle	
Working Session #4 Room A	Working Session #5 Room B	9:30 AM - 1:00 PM	#4 -Ken Rehm, Tom Jackson, John Hackney	#5 - Mike Stark, Dave Nichols, Larry Bright
Lunch		1:00 PM - 2:00 PM	Mary Floyd	
Informational Session #1 - MCO/MPL Findings		2:00 PM - 2:30 PM	Ron Morillo	
Informational Session #2 - NASA S/W Working Group		2:30 PM - 3:00 PM	Sally Godfrey, John Kelly	
Break		3:00 PM - 3:15 PM		
Informational Session #3 - Upgrade to Legacy Systems		3:15 PM - 3:45 PM	Charles Norton	
Break before dinner		3:45 PM - 6:00 PM		
Evening Event		7:00 PM	Mary Floyd, John Donohue	

Day 3 - April 26, 2001

Activity	Time	Point of Contact
Breakfast	7:30 AM - 9:00 AM	Mary Floyd
Introduction	9:00 AM - 9:15 AM	Mary Ann Esfandiari, Rich Doyle
Working Sessions Product Generation	9:15 AM - 10:30 AM	Working Session Co-chairs
Working Session #1 Report Out	10:30 AM - 10:50 AM	Working Session #1 co-chairs
Working Session #2 Report Out	10:50 AM - 11:10 AM	Working Session #2 co-chairs
Working Session #3 Report Out	11:10 AM - 11:30 AM	Working Session #3 co-chairs
Break	11:30 AM - 11:50 AM	
Working Session #4 Report Out	11:50 AM - 12:10 PM	Working Session #4 co-chairs
Working Session #5 Report Out	12:10 PM - 12:30 PM	Working Session #5 co-chairs
Discussion of Workshop Metrics and Areas for improvement, Close-out	12:30 PM - 1:00 PM	Mary Ann Esfandiari, Rich Doyle, Elaine Shell

WORKSHOP LOCATION:

The Williamsburg Hospitality House
415 Richmond Road
Williamsburg, VA 23185-3536
Reservations: 1-800-932-9192
Ph: 757-229-4020
Fx: 757-229-9557
<http://www.williamsburghospouse.com/>

REGISTRATION INFORMATION:

Please complete the attached registration form and return to Mary Floyd at mfloyd@westover-gb.com or via facsimile at 301-345-4659. There is no registration fee for this conference. The only fee is for special events listed below. Please return this form no later than April 7, 2001.

HOTEL ACCOMMODATIONS:

A block of sleeping rooms has been reserved at the Hospitality House under the name "GSFC-JPL Quality". The rate per night is \$133.08 if staying for three nights. This includes taxes, 3 breakfasts, 3 lunches, and 1 dinner and is the approved government per diem. However, if you stay less than 3 nights, the Hospitality House will charge you \$146.41 per night which is over the per diem rate. Please call the

hotel at 1-800-932-9192 to make your reservation. You must call by **April 7, 2001** in order to guarantee availability of rooms and rates. After this date, rooms will be available on a rate/space only basis.

AIR TRAVEL:

The Williamsburg Hospitality House is accessible from three airports. All airports are serviced by most major carriers:

Norfolk International Airport – 45 minutes

Richmond, Byrd Field – 45 minutes

Newport News-Williamsburg Airport – 20 minutes

TRAIN:

An Amtrak train station is located 4 blocks from the hotel.

SHUTTLE:

Taxi service and car rental is available at each airport, requiring less than 50 minutes travel time to the Williamsburg Area.

Shuttle transportation to the area is available from Groome Transportation. Please call the following numbers for information for specific airports: Norfolk and Newport News: 757-877-9477 Richmond: 1-800-552-7911

SOCIAL EVENTS:

Two social events have been arranged for your enjoyment:

Tuesday, April 24

“REMEMBER ME” - The entire family will be mesmerized by Old Paris, an enslaved man who uses oral traditions, music, dance, and spirituality to cope with his loss of freedom and to keep his heritage alive for the next generations. Journey with him through the horrors of the middle passage to his destination at the Carter's plantation. The program will begin at 7:00 p.m. and last for one hour. It will be held at the Hennege Auditorium located 3 blocks from the hotel in the Historic District. The cost per person is \$10.00. This program is appropriate for children under 12.

Wednesday, April 25

Christiana Campbell's Tavern – Join us for regional and southern specialties in Mrs. Campbell's tavern, renowned as George Washington's favorite eating establishment. While you dine in an informal eighteenth-century setting, strolling balladeers may happen by your table to sing songs of two centuries ago. The meal will begin promptly at 7:15 p.m. We will be leaving the hotel as a group at 6:45 p.m. Once we are seated for dinner, you will be able to choose from one of two menus listed below. All meals come with coffee tea and fountain beverages and are inclusive of tax and gratuity. Alcoholic beverages are not included. You do not need to choose your menu in advance, as you will be able to order at the tavern.

As for the transportation to the restaurant, we may be able to use the hotel shuttle and/or NASA vans for those people who do not have cars.

Hickory Grilled Breast of Chicken
With Currant Sauce and Smithfield Ham
Fresh Vegetables and Rice Pilaf
Black Bottom Chocolate Pecan Pie
Or
Fig Ice Cream with Ginger Snap

Hickory Grilled Filet of Salmon
With Baby Shrimp Dijonnaise
Fresh Vegetables and Rice Pilaf
Fresh Baked Cherry Pie

Or
Rum Cream Pie with Chocolate Shavings

DIRECTIONS:

For directions and a map please see <http://www.williamsburghouse.com/>

PARKING:

Parking is free to meeting attendees and overnight guests.

AREA INFORMATION:

For information on the Williamsburg area please see <http://www.colonialwilliamsburg.org/> or call 1-800-HISTORY.

For questions concerning these logistics, please contact Mary Floyd at mfloyd@westover-gb.com or 1-800-634-6326 x107. For questions concerning meeting content please contact John Donohue at john.t.donohue.1@gsfc.nasa.gov or 301-286-6149.

